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Title: Los Alamos National Laboratory Hands on Work in the Plutonium Facility

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# Los Alamos National Laboratory Hands on Work in the Plutonium Facility

James Bunsen – Actinide Material  
Processing & Power 4

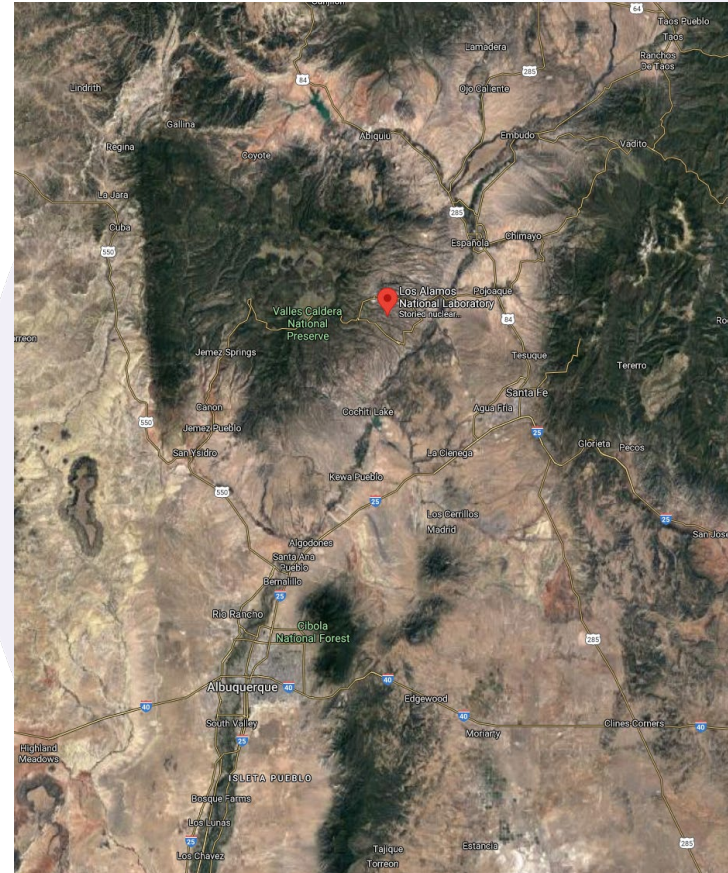
October 1<sup>st</sup>, 2021

# Overview

- Los Alamos National Laboratory
  - Location
  - Overview
- Work at TA-55 (Plutonium Facility)
  - Actinide Material Processing & Power (AMPP)
  - Pit Production
  - Nuclear Material Non-Destructive Analysis
  - Safety Organizations
- AMPP-4
  - Aqueous Chloride
  - Aqueous Nitrate
  - Uranium Disposition

# Los Alamos National Lab - Location

- Distance to Nearby Cities:
  - Santa Fe = 45 min
  - Albuquerque = 1.5 hours
  - Taos = 1.5 hours
  - Pagosa Springs CO = 2.5 hours
  - Denver CO = 6 hours
  - Amarillo TX = 5 hours
  - Dallas TX = 10 hours
  - Flagstaff AZ = 6 hours
- LOTS of National Parks

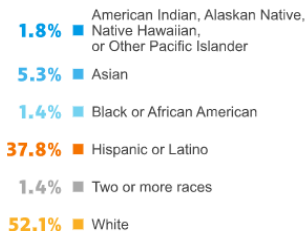
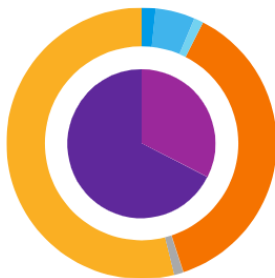


# Los Alamos National Lab - Overview



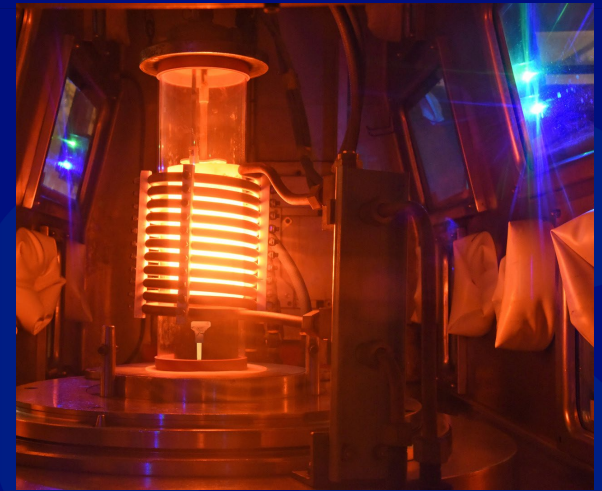
**Female**  
**32.4%**

**Male**  
**67.6 %**



# Work at the Plutonium Facility

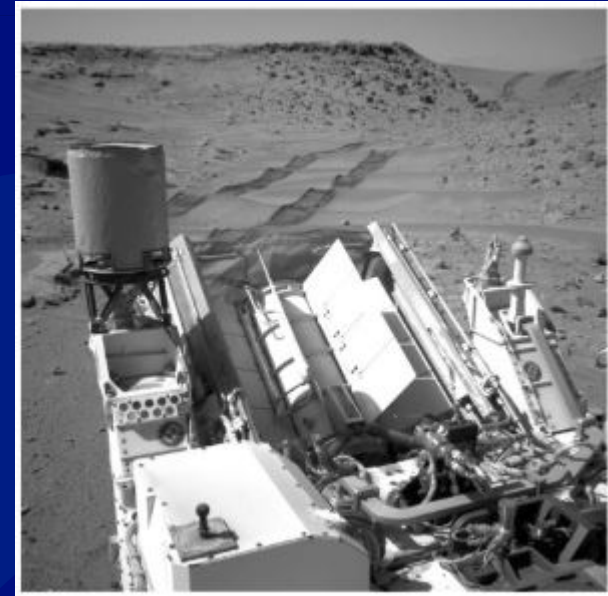
- Primary Mission is Pit Production
  - Creating nuclear material component of weapons
  - Machining/Welding/Fabrication
- Support Organizations
  - NDA
  - Chemistry
  - Facility
  - Waste
  - Safety





# Work at the Plutonium Facility Cont.

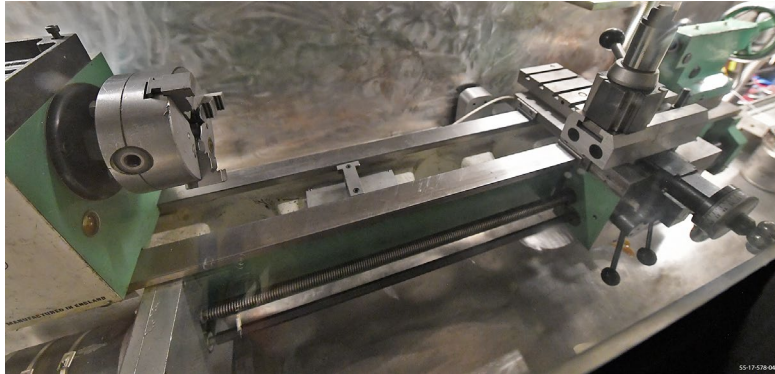
- Actinide Material Processing & Power
- Plutonium 238 Heat Source Operations
  - Radioisotope Thermoelectric Generator – NASA
    - Curiosity Rover
    - Cassini Spacecraft – Saturn
  - ARIES Production
    - (Advanced Recovery and Integrated Extraction Systems)
    - Converts Metal to Oxide





# AMPP-4 Uranium Disposition Team

- Special Recovery Line
- Uranium Electrolytic Decontamination
  - ARIES Support
- Furnaces
  - Similar to ARIES except mainly Uranium



# AMPP-4 Science & Engineering/RCD

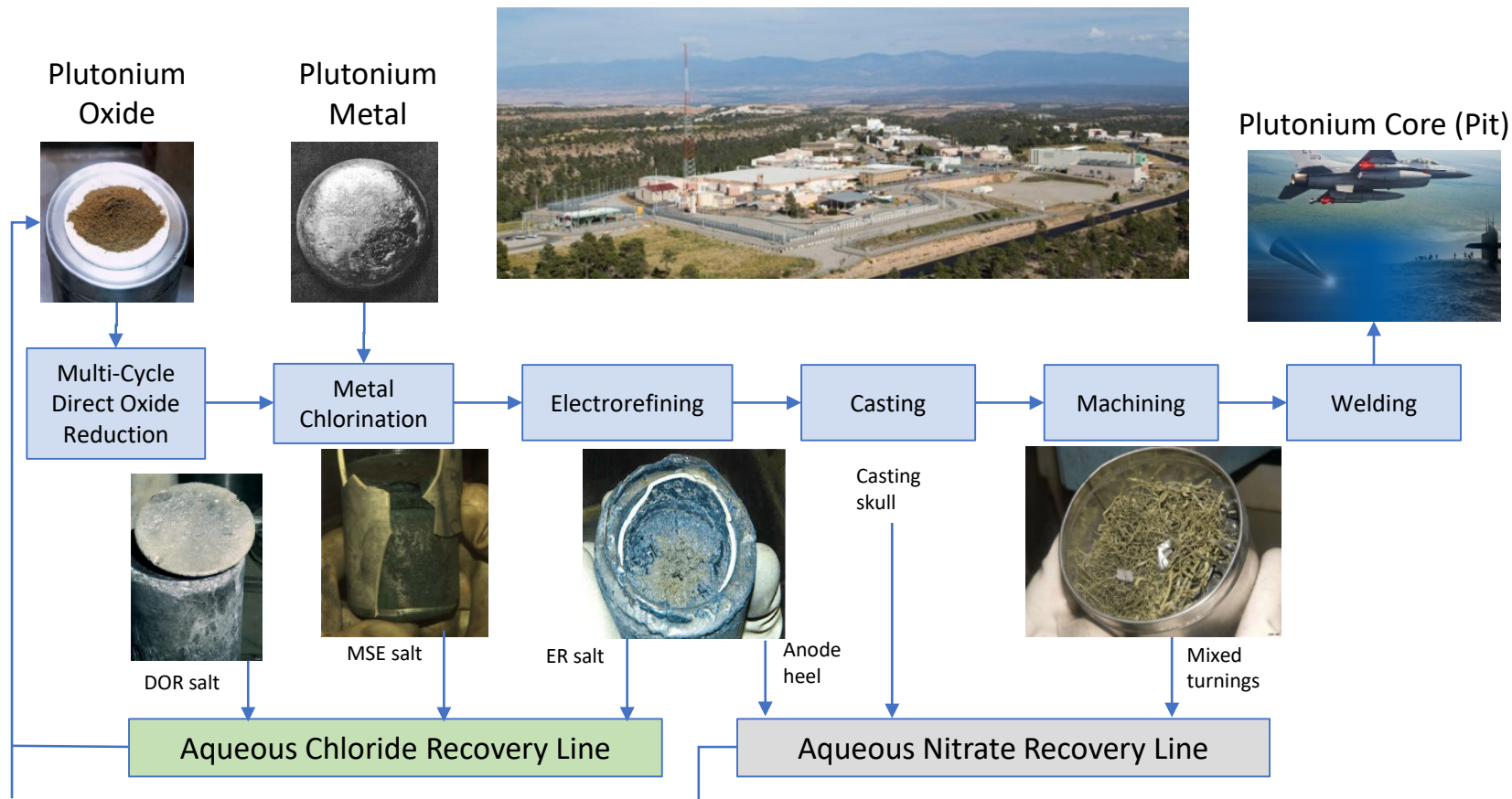
- Container testing and Longevity
  - Corrosion
  - Hydrogen Generation
- Cleanout of the PF4 Vault
  - Splitting/Combining material for disposition



“Moon Rock”



# Pit Production Produces $^{239}\text{Pu}$ Residues





# AMPP-4 Aqueous Nitrate Operations

- Dissolves Impure Pu Oxide
- Purifies via Anion Exchange
  - Oxidized Pu sticks to Resin
  - Resin is the rinsed
- Oxalate Precipitation
- Calcination
- Evaporation
- Cementation



# AMPP-4 Aqueous Chloride Operations

- Bone Crusher
- Dissolves mainly Pu Chloride Salts
- Purify Plutonium using Solvent Extraction
- Oxalate Precipitation
- Hydroxide Precipitation
- Americium Purification
- Calcination



# Job Potential and Pay Bands

Position	Min \$	Mid \$	Max \$
Research Tec 2	\$48,600	\$61,600	\$74,700
Research Tec 3	\$58,000	\$74,400	\$90,800
Research Tec 4	\$64,400	\$83,300	\$102,300
Research Technologist 1	\$77,300	\$101,600	\$126,000
R&D Engineer/Scientist 1	\$85,400	\$112,500	\$139,600
R&D Engineer/Scientist 2	\$94,100	\$124,900	\$155,700



# Jobs and Searching for Jobs

- Lanl.jobs – Usually just search keywords, not “science/eng area or Major”
- Jobs at 55: Search the following Divisions
  - NPI – Nuclear Process Infrastructure (Waste, NDA, Shipping)
  - AMPP – Actinide Material Processing & Power (ARIES, 238 Fuel, Material Recovery/Recycle)
  - PT – Pit Production (Machining, Assembly, Foundry, Metal Production)
  - ORI – Operational Readiness Implementation (CSO, Training, Supply Chain Management)
  - C-AAC – (Analytical Chemistry, Radiochemistry, Mass Spec, Trace Analysis)
  - PAQ – Production Agency Quality (Quality Assurance, Quality Engineering/Inspection)
- More General:
  - Require Associates (Or Equivalent):
    - Technician/Tech
    - Technologist
  - Require Bachelor (Or Equivalent):
    - R&D Engineer – most engineering degrees at the lab
    - Scientist
  - Student:
    - Use Job Category for Student - no keywords

The screenshot shows a web-based search form for jobs at Los Alamos National Laboratory. The form includes the following elements:

- Vacancy Name/Keywords:** A text input field.
- Job Category:** A dropdown menu with a list of categories: Administrative Support, Construction, Contract Management, Draft Design, Engineering, Env Safety Health, Executive, and Facility.
- Date Posted:** A dropdown menu currently set to "All Open Jobs".
- Science/Eng Area or Major:** A dropdown menu.
- Buttons:** "Search" and "Reset" buttons at the bottom right.